DOCUMENT RESUME

ED 246 662 FL 014 446

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TITLE Cognitive and Affective Costs of Bilingual Education: A Look at the Hong Kong Experience.
PUB DATE [84]
NOTE 9p.; Paper presented at the Annual Meeting of the American Educational Research Association (68th, New Orleans, LA, April 23-27, 1984)
PUB TYPE Reports - Evaluative/Feasibility (142) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Adolescents; *Bilingual Education; Cantonese; *Divergent Thinking; *English (Second Language); Foreign Countries; Immersion Programs; *Language of Instruction; *Locus of Control; Outcomes of Education; Secondary Education; *Self Esteem
IDENTIFIERS *Hong Kong

ABSTRACT

A study of the impact of language of instruction in schools on the divergent thinking, self-esteem, and locus of control of expatriate and Hong Kong native Chinese adolescents is reported and some of the cognitive and affective costs of the immersion method of bilingual education are examined. Hong Kong children in most schools must change abruptly from Cantonese to English instruction in secondary school. In this study, four groups of students aged 13-15 were identified based on school type and language of response to the study instrument: (1) an expatriate school, English response; (2) an Anglo-Chinese school, responses in language of preference; (3) a Chinese middle school, Chinese response; and (4) an Anglo-Chinese school, forced English responses. Standard measures of divergent thinking, self-esteem, and locus of control were administered to each group and compared. A significant negative effect of the shift of language of instruction on divergent thinking of Chinese students required to respond in English was found. Expatriate adolescents long instructed in English were found to be significantly higher in self-esteem, internal locus of control, and willingness to accept personal responsibility for negative outcomes than the three groups of Hong Kong Chinese. It is suggested that this immersion method of bilingual education may contribute to a decrease in creative contributions in adulthood even when the ability to make such contributions exists. Serious reconsideration of the use of immersion in such circumstances is recommended. (MSE)

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Précis

Cognitive and Affective Costs of Bilingual Education: A Look at the Hong Kong Experience

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A recent report by a panel of the Twentieth Century Fund recommended that federal money now going to bilingual programs be used in support of programs to teach non-English speaking students to speak, read, and write English. This report has reignited an old controversy. Supporters of the recommendation cite the primacy of learning English. Critics reject the recommendation as a "sink or swim" approach. An examination of some cognitive and affective outcomes of the Hong Kong educational experience, considered as an example of the sink or swim approach, is instructive. Outcomes in divergent thinking, self concept, and locus of control for students who experienced native language and English language instruction are compared. Results suggest a devestating effect of the sink or swim approach on divergent thinking abilities. Lesser effects were observed for measures of self concept and locus of control.

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Summary

Cognitive and Affective Costs of Bilingual Education:
A Look at the Hong Kong Experience

a) Introduction and Purpose

The present research was conducted in the British crown colony of Hong Kong, a bilingual society (English and Cantonese) in which the population is composed of 97% Chinese; the remaining 3% is a mixture of expatriates (mostly European) and other racial and cultural groups. The purpose of this study was to explore the impact of language of instruction in schools on divergent thinking, self esteem, and locus of control in expatriate and Hong Kong Chinese adolescents. In particular, some cognitive and affective costs of the immersion method of bilingual education are examined.

In Hong Kong much of the blame for an absence of creative thinking is attributed to the trauma students experience in having to switch from Chinese to English instruction during the transition from primary to middle school (Kvan, 1969). Eighty-seven percent of the school age population in Hong Kong endure this trauma in Anglo-Chinese schools. As soon as these students enter the Anglo-Chinese secondary schools at the age of 11+, they begin to be taught in English, and from henceforth the best of their energies must be devoted to cultivating English (Cansdale, 1969). Many teachers hold that this switch is made at the worst possible developmental stage. Just as the child is reaching the time when he or she would normally begin to consume any kind of reading-matter, when intellectual appetites are voracious and curiousity is aroused, the mother-tongue is forced into a secondary place in education (Cansdale, 1969). Other Hong Kong Chinese students continue in a Chinese language middle school. Children of expatriates attend schools with English as a medium of instruction. A comparison of these different language-of-instruction groups is instructive with regard to the controversy reignited by the Twentieth Century Fund's task force on federal elementary and secondary education policy about bilingual education. (Making the Grade, 1983).

b) Method and Data Source

Four groups of participants (N=146, ages 13-15) were identified on the basis of type of schools and language of response to study instruments: an expatriate school, English responses; an Anglo-Chinese school, responses in language of preference; a Chinese middle-school, Chinese responses; and an Anglo-Chinese school, forced English responses. An equal proportion of males and females participated in the study.

Data on all students were obtained from measures of divergent thinking, self-esteem, and locus of control. Three divergent thinking abilities (fluency, flexibility, and originality; Guilford, 1967) were investigated. Fluency, flexibility, and originality of thought were measured through subjects' responses to a free-response exercise in divergent thinking. (This exercise is conceptually

similar to 'Sounds and Images', Cunnington and Torrance, 1965). Participants responded in writing to presentation of four groups of auditory stimuli recorded on a cassette tape (duration 17 min and 53 sec). These groups of auditory stimuli consisted of both familiar (e.g. a thunderstorm) and abstract (e.g., an electronically synthesized cymbal roll) sounds. Each group of sounds was preceded by narrated instructions (encouraging participants to be imaginative) and followed by a silent period. Subjects responded while the sounds were being played and during the silent periods after the sounds. The sequence of four sound groups was played twice. Preliminary testing with the divergent thinking instrument indicated that lack of sufficient response time was not a problem for any age group.

Fluency was operationally defined as the total number of responses. Nine flexibility categories of responses were developed by the investigators a priori. Each subject response was identified and coded as belonging to one of the nine categories. The number of different categories represented in the responses for each sound group was summed to obtain the subject's flexibility score. Originality was defined by two criteria, statistical rareness and cleverness. A statistically rare response was one that occurred in less than 5% of total responses. 'Cleverness' was determined by interscorer judgment as to imaginativeness and appropriateness of a response. To be scored as original a response needed to meet both criteria.

Responses to the divergent thinking exercise were scored independently by 2 people. Scores for each participant were summed across the sound groups for fluency, flexibility, and originality. Interscorer reliabilities were as follows: fluency = 0.99; flexibility = 0.95; originality = 0.92. Test-retest reliabilities on a subsample of 21 participants were as follows: fluency = 0.75; flexibility = 0.65; originality = 0.77. Support for the construct and criterion-related validity of the exercise is presented in Khatena and Torrance (1973).

Self-esteem was measured among secondary-school students with a 54-item modified version of the Coopersmith (1967) Self-Esteem Inventory. The modification was guided by an effort to adapt the measure for use with adults (e.g., changing the statement 'I find it hard to talk in front of the class' to 'I find it hard to talk in front of people'). A test-retest reliability of 0.77 was obtained on a subsample of 21 participants.

Locus of control was measured with two scales: the Nowicki-Strickland Locus of Control Scale (Nowicki and Strickland, 1973) and the Intellectual Achievement Responsibility Questionnaire (Crandall, Katkovsky, and Crandall, 1965). Data reporting respectable validity and reliability have been reported by these investigators. For the Nowicki-Strickland Scale, consisting of 40 items representing a variety of interpersonal and motivational areas, a high score indicates external orientation and a low score indicates internal orientation. The IAR Questionnaire, consisting of 34 forced-choice questions representing academic achievement situations, yields three scores: responsibility for positive outcomes, responsibility for negative outcomes, a total score (yielded by the sum of positive and negative outcome scales; higher scores indicating a more internal orientation).

All participants completed the same test procedure. At the beginning of the data collection session each person was given a research booklet which contained the response formats for the instruments. The cassette tape containing the divergent thinking test was played (directions were included on the tape). Participants

responding in Chinese were given instructions in Cantonese. The self-esteem inventory and locus of control measures were untimed. Data gathering sessions were conducted in educational settings with groups ranging in size from 16 to 40 persons.

c) Results and Implications

Mean scores and standard deviations on measures of fluency, flexiblity, originality, self-esteem, and locus of control among the four comparison groups of secondary school students appear in Table 1. Table 2 presents correlations of all variables for each of the four groups separately. The devastating effect of the language shift on divergent thinking for Chinese secondary school students required to respond in English is apparent. Most notably, the ability to produce original ideas seems inhibited when one is required to respond in a language other than one's mother tongue. Expatriate adolescents were significantly higher in self-esteem, internal locus of control, and were more prepared to accept personal responsibility for negative outcomes than the 3 groups of Hong Kong Chinese. Correlations among measures suggest that they are valid for use in the Hong Kong Chinese culture.

According to Cooper (1980), "There can be no question of the debilitating effects upon academic curiosity and creativity in young children of having to cope with an alien tongue in their everyday educational experiences ... the child is reduced to memorization by rote, both of what is said in class, and what is written in books ... that the Chinese child is confronted with an endless regimen of exams in an alien language which he has all he can do to understand let alone use creatively is not considered relevant" (pp. 40-41).

Although the results for the self-esteem and locus of control measures were less straightforward, they do suggest that these measures have some validity for cross-cultural use, at least in the Hong Kong Chinese culture. Also, with respect to self-esteem it may be, as Jaquish and Ripple (1980, 1981) suggest, that self-esteem (or the lack of it) leads to a set of personal-social expectations that generate a self-fulfilling prophecy. The result is a decrease of creative contributions in adulthood even when, from an abilities point of view, such creative contributions are still potential, if unrealized.

This investigation provides corroborative data for the idea that "what is honored in a society will be cultivated there" (Torrance, 1967, p. 308). Such a drastic shift to an alien language of instruction seems to exact a heavy price in terms of cultivating divergent thinking and, perhaps, of potential creative performance of students. There are implications here for bilingual and educational programs. Cognitive and affective costs of the immersion method of bilingual education must be evaluated carefully. If (contrary to the recommendation of the Twentieth Century Task Force) the costs of the immersion method are judged to be too expensive, further investigation is needed in regard to the effectiveness of various mixes of languages of instruction. Such research is called for already in Hong Kong (Gibbons, 1982). The desirable outcome of such research would be the development of genuinely bilingual learning materials, and bilingual learning and teaching strategies.

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Table 1

Means and Standard Deviations for Fluency, Flexibility, Originality, Self Esteem and Measures of Locus of Control

		Fluency	Flexibility	Originality	Self Esteem	Locus of Control	IAR/Total	IAR/Success	IAR/Failure
Group 1 Responding in English (Expatriate School) N:30	$\bar{X}$	21.97*	16.87*	6.07*	33.33***	13.38	24.37	11.85	12.51*
	S.D.	7.57	3.66	3.92	6.94	4.80	3.47	1.81	2.75
Group 2 Responding by preference (Anglo-Chinese School) N:40	$\bar{X}$	24.35*	17.68**	7.90**	24.75	16.84*	22.46	11.79	10.67
	S.D.	10.31	4.92	5.27	6.52	4.83	4.33	3.00	2.30
Group 3 Responding in Chinese (Chinese Middle School N:38	$\bar{X}$	23.68*	14.74*	5.07*	27.40	16.97*	23.18	12.05	10.87
	S.D.	8.19	3.99	3.32	5.91	4.22	3.64	2.55	2.23
Group 4 Responding in English (Anglo-Chinese School) N:38	$\bar{X}$	9.40	8.55	.08	24.74	17.00*	24.02	12.37	11.63
	S.D.	3.25	2.55	.27	7.14	4.73	2.93	1.68	2.80

* Significantly higher than one group at beyond the .05 level.

** Significantly higher than groups 3 and 4 at beyond the .05 level.

*** Significantly higher than groups 2, 3, and 4 at beyond the .05 level.

Table 2 (a, b, c, d)

Correlations of All Variables for Each Group

a) Expatriate School/English Responses

FLU	1.00					
FLEX	.81**	1.00				
ORIG	.78**	.64**	1.00			
SE	.14	.09	.15	1.00		
LOC/NS	.03	.02	- .05	- .24	1.00	
IAR/TOTAL	- .07	- .13	- .16	- .30	.02	1.00

b) Anglo-Chinese School/Preference Responses

FLU	1.00					
FLEX	.92**	1.00				
ORIG	.76**	.78**	1.00			
SE	- .00	- .03	- .17	1.00		
LOC/NS	- .13	- .11	- .03	- .34*	1.00	
IAR/TOTAL	- .01	- .04	.04	.13	- .43**	1.00

c) Chinese School/Chinese Responses

FLU	1.00					
FLEX	.83**	1.00				
ORIG	.38**	.47*	1.00			
SE	.03	.12	- .13	1.00		
LOC/NS	.27	.25	.20	- .33*	1.00	
IAR/TOTAL	- .00	- .04	- .15	.30	- .15	1.00

d) Anglo-Chinese School/English Responses

FLU	1.00					
FLEX	.95**	1.00				
ORIG	.54**	.48**	1.00			
SE	.01	- .02	- .04	1.00		
LOC/NS	- .17	- .16	- .13	- .45**	1.00	
IAR/TOTAL	.06	.10	- .14	.44**	- .53**	1.00

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*Significant at beyond .05 level

**Significant at beyond .01 level